CATTLE TRADE ACROSS THE DANUBE AT VÁC (HUNGARY)

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Summary

The tumultous history of the Carpathian Basin did not favor the preservation of medieval records in Hungary. Excavations at the urban site of Vác provided a unique opportunity to compare the role of cattle in both the local diet and well documented large scale trading utilizing the town's ferry. Trends seen in the archaeological and historical sources confirm each other. Direct parallels, however, should be treated with extreme caution.

Key Words

Cattle Bones, Medieval Hungary, Animal Trade, Seasonality, Written Sources.

Résumé

Le commerce de bovins dans la vallée du Danube au Vác (Hongrie).

L'histoire mouvementée du Bassin carpathique n'était pas favorable à la conservation des documents écrits du Moyen Age. Les fouilles archéologiques, faites à Vác, ont donné l'occasion unique de pouvoir faire la comparaison entre les documents concernant le rôle de la viande de bovin dans la vie de la ville et ceux du commerce de bovin à distance à travers la ville. Les sources de l'archéozoologie et les documents écrits confirment l'un et l'autre, mais malgré ce fait, on doit utiliser les analogies directes avec une grande précaution.

Mots clés

Ossements Bovins, Moyen Age en Hongrie, Commerce des Animaux, Saisonnalité, Documents écrits.

Introduction

The city of Vác occupies a strategic position near the Danube Bend Gorge in Hungary. Throughout the Middle Ages, it was an important crossing point on the left bank of the Danube river on the way to Vienna. Hungary fell to Ottoman Turkish expansion in 1526. Conventionally, this date marks the end of the Hungarian Middle Ages. Turkish administration took over in 1546 in Vác (Miklós, 1991 : 47). Customs records show that the importance of cattle did not diminish with the onset of what is termed the "Historical Period" in Hungary.

Centuries of tumultous events in the Carpathian Basin did not favor the preservation of written medieval records in Hungary. For most archaeozoologists, linguistic barriers (Latin, Archaic Hungarian, Turkish) also limit direct access to the few surviving documents. The overlap between archaeozoological and historical research at Vác, a town of focal importance, offered a unique opportunity to compare medieval osteological evidence (Vörös, 1986 ; Bartosiewicz, 1991) to subsequent written records concerning cattle trade. Assuming that political changes did not interfere with fundamental farming practices, data from 16th century written sources (Fekete, 1944 ; Gaál, 1966 ; Káldy-Nagy, 1968) were reviewed in light of the archaeozoological record.

Material and methods

An urban habitation area of some 3200 m^2 was revealed during rescue excavations at the Széchenyi street site in this town (Miklós, 1991 : 10). A total of 2654 identifiable bone specimens (NISP) from the 13th-16th centuries were recovered from 54 features. Chronological sub-sets differ in size with an overwhelming dominance of 15th century animal remains (87.2 %). Since most of the material was well preserved in relatively deep and mostly primary deposits, only a small degree of natural fragmentation and surface erosion/weathering was observed.

A standard faunal report on this site, including chronological sub-divisions and measurements, has already been published (Bartosiewicz, 1991); only a brief summary of the species identified is shown in table 1. In this presentation contradictory estimation of the numbers of individuals were avoided by simply denoting the articulated parts of one or more skeletons. Table 1 shows that while the faunal assemblage is dominated by the 15th century sub-sample, cattle seems to have been the most important source

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Table 1 : Comprehensive faunal lists of the Vác - Széchenyi street settlement (bones from articulated skeletons are marked by bold print).

Vernacular name	Latin name	Authority	Centuries			
			13th	14th	15th*	16th
Cattle	*Bos taurus*	L. 1758	82	50	1620	125
Sheep	*Ovis aries*	L. 1758	1	2	43	12
Goat	*Capra hircus*	L. 1758	1		12	1
Caprine	*Caprinae*		1	3	114	1
Pig	*Sus domesticus*	Erxl. 1777	13	2	238	9
Horse	*Equus caballus*	L. 1758	6	1	28	
Dog	*Canis familiaris*	L. 1758			**42**	6
Cat	*Felis catus*	L. 1758			**90**	2
Red deer	*Cervus elaphus*	L. 1758			2	1
Roe deer	*Capreolus capreolus*	L. 1758			6	1
Wild pig	*Sus scrofa*	L. 1758			4	
Brown hare	*Lepus europaeus*	Pall. 1778			7	
Lynx	*Lynx lynx*	L. 1758			**11**	
Domestic hen	*Gallus domesticus*	L. 1758	1	3	74	14
Goose	*Anser sp.*				8	
Crane	*Grus grus*	L. 1758			**5**	
White stork	*Ciconia ciconia*	L. 1758			1	
Jaybird	*Garrulus glandarius*	L. 1758			**5**	
Sturgeon	*Acipenser sp.*				1	
Carp	*Cyprinus carpio*	L. 1758			4	
Pike	*Esox lucius*	L. 1758			1	
Fish	*Pisces sp.*				11	
Total NISP			**105**	**61**	**2327**	**172**

**Including 210 bones identified by Vörös (1986)*

of meat throughout the centuries, sometimes represented by two orders of magnitude higher bone frequencies than other domestic animals in terms of the number of identifiable bone specimens. In addition to the apparently negligible role played by pork and mutton, a relatively great number of domestic hen remains were identified.

Due to the multidisciplinary nature of this paper the quantitative analysis of differing data sets was limited to simple, largely heuristic presentations. Correspondences between archaeozoological observations and historical records must be treated carefully in light of the extremely complex nature of urban provisioning systems.

Results and discussion

Meat consumption

As far as the most important domestic animals are concerned, most of the animal protein obviously derived from cattle at this settlement. Even if the greater degree of fragmentation (characteristic for larger bones) is taken into consideration, one should remember that one cattle may provide more meat than ten sheep (Matolcsi, 1982 : 116).

Sheep and goat could be distinguished in meaningful numbers only in the 15th century material. Identification beyond the *Caprinae* subfamily was possible in one third of the cases. At this site, sheep bones were four times as common as those from goat. The written sources do not even mention goat trading.

Pigs are also entirely missing from Turkish trading records, although it is difficult to tell to what extent the absence of this species was due to the difficulty of herding over long distances and/or its declining role under Islamic dietary restrictions. In light of the great contribution of pork to the diet of at least one Hungarian town under Turkish occupation (Magyar, 1988 : 157)

keeping pigs may also have been a form of "tax evasion". As opposed to cattle, for example, these animals represented no major value for the occupying Turkish authorities.

The number of animal species identified in each period is a function of assemblage size, that is, NISP. Species composition, i. e. taxonomic richness therefore cannot be compared directly between samples of greatly differing sizes. The results thus obtained would be more characteristic of NISP than the differential richness of the assemblages studied : smaller assemblages are more likely to contain fewer species, and when samples are drawn in a perfectly random fashion, the least frequent species will be the last to occur (Grayson 1984 : 137). Rare species, therefore, are best represented in the large, late medieval faunal sample detailed in table 1.

The relationship between assemblage size and taxonomic richness can be expressed by a linear equation following the logarithmic transformation of the two variables. This allometric relationship between NISP and the number of species identified (R) in the chronological sub-sets was as follows ($r = 0.978$, $P \leq 0.05$) :

$$\log R = 0.377 \log NISP + 0.090$$

When chronological components of the settlement (Bartosiewicz, 1991) are substituted in this equation, it becomes clear that smaller sets of bones (13th-14th and 16th centuries) contain fewer animal species only because of the sizes of these samples. There was a greater statistical probability that sporadic wild mammalian and bird remains would occur in the dominant 15th century material.

It is of special importance that the overwhelming majority of cattle bones (over 90 %) originate from mature animals. This may not only be indicative of central butchery and meat distribution, but is possibly influenced by cattle trading as well : long distance cattle drives were unlikely to have included very young calves which were reared in rural areas.

Meat quality

In the zoological material, selected meat parts and butchering marks (Bartosiewicz, 1991 : 131) are suggestive of commercial meat distribution. Estimations between the proportions of meat/fat/bone in cattle carcasses aided by a discriminant analysis (Bartosiewicz, 1988 : 362) show that most bones recovered at this site indeed represent body parts with high percentages of meat.

Each bone fragment can be classified within a carcass part of known gross ratios between meat, fat and bone (flank, chuck, brisket etc.). NISP values of cattle remains

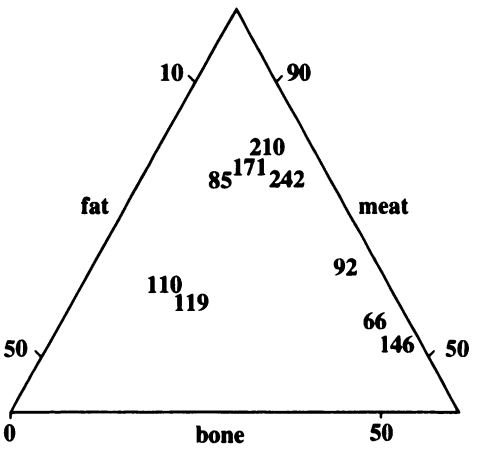

Fig. 1 : The composition of 15th century cuts of beef (numbers stand for NISP representing various proportions of meat, bone and fat).

associated with these commercial cuts are plotted in the ternary diagram of figure 1 to show the estimated proportions between carcass components they represent. More than half of the bone fragments fall in the upper segment of the graph which is associated with 65-80 % of meat and would, more-or-less, correspond to Category "A" in Uerpmann's (1973) sub-division that is the axial skeleton and muscular proximal (*stylopodium*) segments of the extremities.

The site under discussion here lay in the proximity of the medieval city center and was probably supplied with meat from other areas where primary butchering took place and poor quality cuts were left behind or merchandised elsewhere. Although carcass parts of high culinary value may be subjected to more intensive secondary butchering, lower quality regions (C) are also represented by fragmented bones (e. g. horn cores, mandibles) in this material.

Seasonality

Probably as a consequence of urban meat provisioning systems, only very few bones originated from the young of economically important animals. Sporadic osteological indicators of seasonality at Vác are related to animal species whose dietary contribution was irrelevant (table 2). All three features in which seasonal indicators could be identified, however, contained bones of cattle as well.

Metapodia of a female lynx displayed skinning marks. Best quality pelts may be harvested during the early winter (Trolle-Lassen, 1987 : 89). If she was killed opportu-

nistically, a late winter date is more likely, when young adults often stray away during the rutting season thus becoming more vulnerable to human predation (Kvam, 1991 : 151).

Table 2 : Seasonal indicators in the 15th century material.

Species	Estimated season	Feature
Lynx skeleton	November/February	Pit 26/a
Crane skeleton	spring to autumn?	Pit 37
Horse embryo	November	Pit 44

The time interval shown for a fragmentary crane skeleton (Peterson *et al.*, 1969 : 46) holds true if the animal was hunted for food (Henrikson, 1973 : 46). Dates, however, may be erroneous if these wading birds had different medieval migration patterns or were kept as pets as is known from ethnohistorical sources (Bergius, 1787 : 82 ; Gunda, 1979 : 96, Abb. 57). This latter possibility is supported by the presence of articulated crane bones in the Vác assemblage.

The age of a horse embryo was estimated on the basis of the diaphyseal lengths of a scapula, a radius and a femur (Prummel, 1989 : 75). The time interval presented is based on an April-May birth date. While monthly horse trading ranged between 100 and 300 animals in August through October in 1563, it fell to its minimum during November (0) and December (19 ; Káldy-Nagy, 1968 : 36). It is also unlikely that a pregnant mare would have taken part in long-distance livestock drives.

These vague and inconclusive examples of seasonality, however, say less about fluctuations in animal trade than written sources. Fifteen century monthly butchery records from Italy show a strong, species dependent seasonality in the kill-off patterns of domestic animals, especially in the case of small stock (Clark, 1992 : 78). Data from Turkish Period documents in Vác, plotted along a time scale, show stronger seasonality in cattle trading than is the case with sheep (fig. 2). Cattle were fattened during the summer, then driven west across the Vác ferry. In fact, sheep driving seems to have vastly dominated during the winter of 1563-1564. In fact, the aforementioned 15th century data cited by Clark (1992 : 78, table 1) also show increasing cattle butchery between October and January in two Italian towns. The lynx remains as well as the horse embryo may be assigned with great probability to this time interval.

Trading data

The dominance of cattle (c.a. 80 % NISP) is also remarkable when compared with 35 medieval villages and castle sites from Hungary (Bökönyi, 1974 : 340-436 ; fig. 3). Although smaller differences between the percentual contribution (NISP) of cattle to faunal lists from villages and castles may be biased by taphonomic factors (deposition, preservation, recovery) as well as varying assemblage sizes, the high proportion of cattle remains in Vác consistently stands out.

Even if the difference shown in figure 3 cannot be tested in terms of formal statistical significance, it is substantiated by written records. A low point in trading is represented by the 347 cattle registered at the Vác ferry between August 29 and October 25 in 1546, the year of the Turkish occupation (Gaál, 1966 : 147). By 1560, however, 7418 cattle were driven westwards on a single day across the Danube at this point (Fekete, 1944 : 246). Between 1562 and 1564, a monthly average of 200 may be estimated to have been brought to the town (Gaál, 1966 : 147).

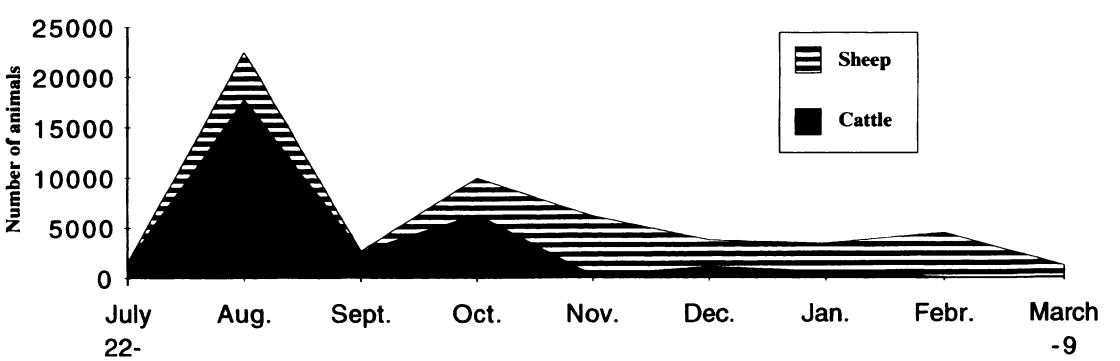

Fig. 2 : Livestock trade in Vác during 1563-1564.

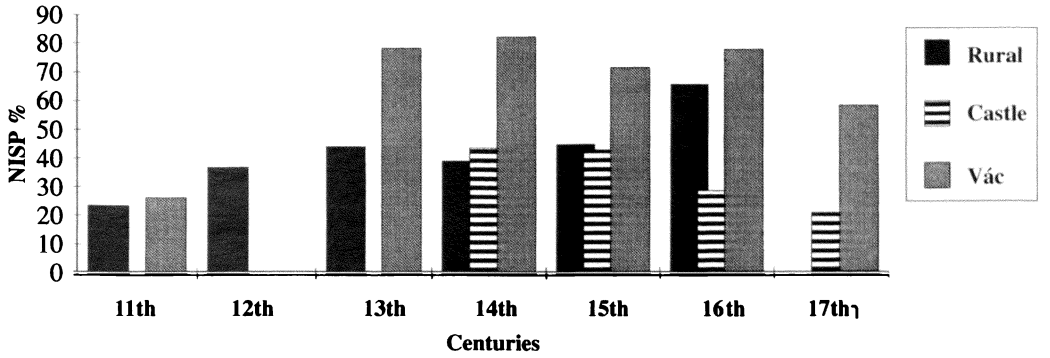

Fig. 3 : The percentage contribution of cattle at 35 sites in Hungary.

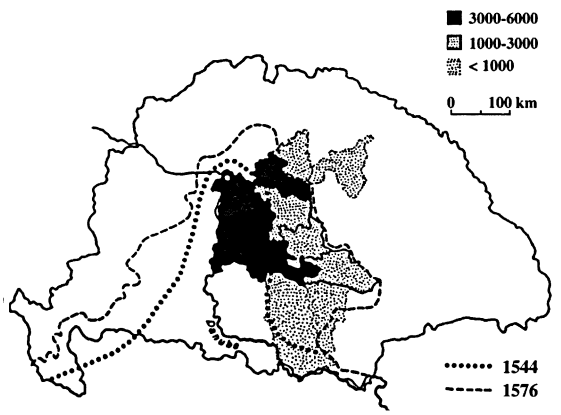

Fig. 4 : The numbers of cattle recorded in Vác representing various counties in medieval Hungary. Vác is marked by a white dot in the northwest corner of the darkest area. Dotted and dashed lines stand for the borders of the 1544 and 1576 Turkish expansion respectively.

The geographical distribution of sources listed in trading records between July 1563 and March 1564 (Káldy-Nagy, 1968 : 32) is summarized in figure 4. In this map, Vác is marked by a white dot east of the Danube Bend Gorge, while advancing Turkish military expansion is indicated by dashed and dotted lines respectively. Most of the animals originated in the plain region of the Danube - Tisza interfluve under Turkish occupation. The western border of the main catchment area (black in figure 4) was the Danube river itself. Other crossing points south of Vác have also been documented at the fords of Dunaföldvár and Keve. These smaller towns, have, however, been less thoroughly investigated by archaeologists. The traffic at these two points peaked at letting through 9905 cattle within two months (Bocsor, 1960 : 26). Cattle driven north of the Danube Bend Gorge did not have to cross this large river. More than 84 000 of them, however, were registered during the year of 1578 crossing one of its left banks tributaries at the town of Érsekújvár (Nové Zámky, Slovakia ; Gaál, 1966 : 147).

According to Turkish tax rolls, 28 holders payed taxes after 2617 cattle in Vác itself in 1560 (Gaál, 1966 : 147) which clearly illustrates the extent of local cattle keeping in comparison with trade related transit traffic.

Conclusions

Medieval Vác was an episcopal center whose economy survived the Turkish Period, in part, by exploiting large scale livestock trading. Beef was undoubtedly the predominant source of animal protein in the apparently affluent part of medieval Vác discussed in this study. Customs records confirm the continuing importance of cattle in Turkish Period trading data, among others, between July 1563 and March 1564 (Káldy-Nagy, 1968 : 32).

The consonance between the great contribution of cattle to the local diet (archaeozoological material) as well as trade records support the hypothesis that distances between the production center and the urban market may vary extremely, including some degree of local production (Clark, 1992 : 76). The focal geographical position of Vác evidently added special emphasis to this situation.

Regardless of the winter lull in cattle trading suggested by written sources, cattle remains also dominated in Pits 26/a, 37 and 44 whose seasonal dating was attempted. This may indicate that drives had little direct influence on beef consumption in this quarter of the town, but rather contributed to a high standard of living that made beef continuously affordable. Several imported archaeological artifacts confirm that inhabitants in this part of town were reasonably well off (Miklós 1991 : 39).

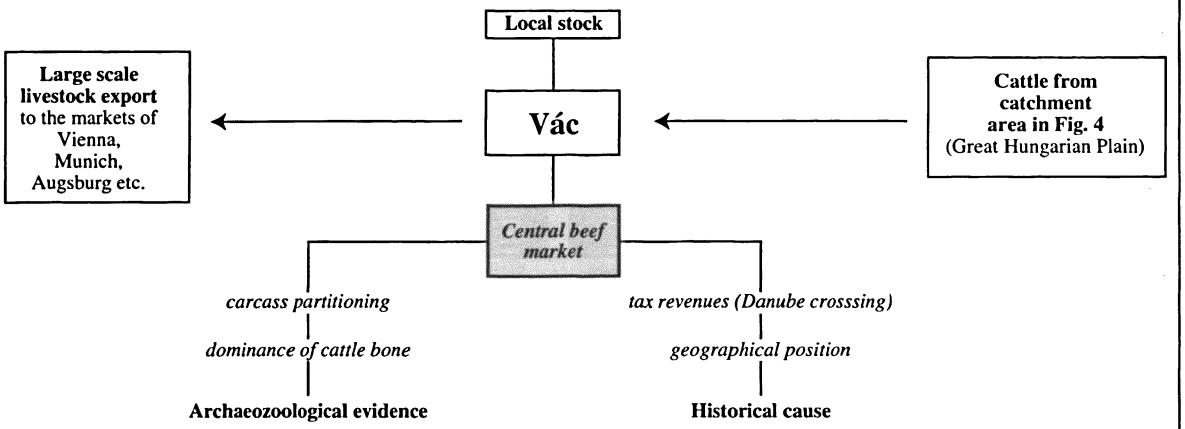

Fig. 5 : The development of urban meat market in relation to long distance trading.

The apparently close correlation between beef consumption and cattle trading will have to be tested using evidence from other sites within the city of Vác which were less of a central position. Seasonal peaks in the availability of cattle from a vast geographical area, however, may have brought prices down so that beef became affordable even for common people in more peripheral quarters.

Acknowledgements

Grateful thanks are due to Dr. Zsuzsa Miklós and Dr. Klára Kóvári who supplied bone material as well as archaeological information for the writing of this study. Help by Dr. Mária Bondár and Dr. Alice M. Choyke with translation and linguistic revisions must also be acknowledged here.

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